EASTERN RESEARCH GROUP, INC.

MEMORANDUM

TO: Jim Eddinger, EPA/ESD

FROM: Christy Presson Burlew, ERG/MOR

DATE: March 27, 1998

SUBJECT: Draft Summary of February 26, 1998 Boiler Work Group Meeting

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1.0 INTRODUCTION

A meeting of the Industrial Combustion Coordinated Rulemaking (ICCR) Boiler Work Group (WG) was held on February 26, 1998 in Winston Salem, NC. Topics of discussion included an overview of February 24&25 Coordinating Committee (CC) meeting, status of databases, preliminary list of hazardous air pollutants (HAPs) of interest, additional test data for wood boilers, coordination with Incinerator WG on Regulatory Alternatives Paper (RAP), coordination with the Testing and Monitoring Protocol WG, status of Economics task group, good combustion practices and pollution prevention, and revised control level summaries and model boiler analyses. The Agenda is included in attachment 1.

Meeting attendees included representatives of the OAQPS Emission Standards Division of the Environmental Protection Agency (EPA), trade associations, industry, environmental associations, and State and local agencies. A complete list of attendees (with their affiliation) is included as attachment 2.

2.0 SUMMARY OF DISCUSSION

Jim Eddinger, of EPA, opened the meeting. Todd Barker reviewed the meeting agenda. The following topics were then discussed:

2.1 Status of Inventory, Survey and Emissions Databases

Ruth Mead, of ERG, provided the status for all of the ICCR databases. Version 3.0 of the Inventory database is now posted under the Information Collection heading on the TTN. This new version includes a documentation database and a delete database that contains all the information that was changed or deleted based on the suggestions from WG members. There are also CDS of the database available for purchase at a cost of $60 for those that don't want to download it. Version 2.0 of the ICCR Survey (ICR) database will be posted to the TTN the week of March 2. This version of the database will have all the scanning errors corrected. Version 2.0 of the emissions database is also scheduled to be posted to the TTN the week of March 2.

2.2 Overview of February 24&25 CC Meeting

Jim Stumbar, reviewed the topics discussed at the preceding CC meeting. Mr. Stumbar's handouts summarizing the CC discussions are provided in Attachment 3. Mr. Stumbar reviewed the status of the solid waste definition for the purposes of Section 129. Mr. Stumbar indicated that at the EPA staff level, there is consensus on listing natural gas, fuel oils (distillate and residual), coals and clean wood as fuels, and comparable fuels approach is being considered but there is no consensus. One WG member questioned why the fuel list was different from the recommendation presented by the Solid Waste Definition ad-hoc group. As a clarification, another WG member suggested that the language from the CC flash notes be read. Fred Porter, of EPA, also pointed out that there were actually three different recommendations submitted to EPA for consideration: (1) the report of the Solid Waste Definition subgroup, (2) a majority report, and (3) a minority report. Mr. Porter indicated that the current list of fuels summarized by Mr. Stumbar are the only ones for which there was consensus. Mr. Porter also indicated that final determinations have not been made, but EPA staff, on a case by case basis, can give a feeling of where other fuels may fall using the comparable fuels approach.

Another issue discussed at the CC that pertained specifically to the Boiler WG was the boiler WG preliminary list of HAPs of interest. The majority and minority reports on this issue were presented as status reports to the CC instead of an issue that needed decisions from the CC. It was decided by those that prepared the majority and minority reports, that the two opinions could be reconciled further. The Boiler WG also agreed that it was withdrawing the reports, and

would go back to the CC at the April meeting with the list of HAPs as well as a proposed testing program.

Mr. Stumbar also summarized the following topics discussed at the CC meeting:

- EPA has not adopted a single, uniform definition of POMs. EPA has decided that for any given source category the most appropriate will be selected.
- EPA has accepted the majority report on combustion turbine pollutants for testing and the majority report on RICE test plans and pollutants.
- The ICCR has had problems with small business representation and needs to promote greater participation.
- The CC has adopted a recommendation that direct-fired process heaters that are covered by their own MACT will be dropped from consideration.
- The CC attendees also participated in a MACT floor exercise dealing with categories that have low emissions and no available add-on controls. Details of the exercise are included in attachment 3. Mr. Stumbar indicated that this exercise will probably be pertinent to the Boiler WG as it deals with gas and oil-fired units.

2.3 HAPs of Interest

Wendell Brough, a member of the HAPs task group discussed the next steps for developing the preliminary list of HAPs of interest. Mr. Brough explained that the current list is a list of HAPs of interest which means they need further investigation. The list will then be refined to a list of HAPs to be tested. The final list will be a list of HAPs to be potentially regulated. The HAPs task group will also be more specific in its definitions. There will be three separate definitions for natural gas: pipeline quality gas, refinery process gas, and well-head gas. Distillate oil includes number 1 and 2 fuel oil while residual oil includes crude oil and number 4, 5, and 6 fuel oil. The definition of coal will be the ASTM definition. Woods will be combined into the following categories: clean wood, wood from construction/demolition, wood from manufacturing, and wood with binders and adhesives. The HAPs task group plans to have recommendations by the April CC meeting. The non-fossil subgroup does not currently have a list of HAPs of interest. Catherine Beahm agreed to work with Jim Eddinger to draft a preliminary list of HAPs for non-fossil boilers.

Another member of the HAPs task group added that most of the uncertainty was due to lack of data. He said these data gaps need to be identified and filled with data. For instance, there is the issue of radio nuclides in coal raised in the utility HAP study, but it is unclear if this is also an issue for industrial boilers. The member also stated that the HAPs need to be tested simultaneously with criteria pollutants so that if a facility uses good combustion practices the test will show how this affects HAPs.

One WG member pointed out that if the New Hampshire model was being used as a screening mechanism and it was not a representative model, then it is possible that other HAPs would fall off the list if realistic assumptions were used. Another WG member agreed that the process would have to be refined. The member provided a graphic representation of how the New Hampshire model can change based on the input assumptions. This graph is provided as attachment 4. The member stated that the New Hampshire assumptions were not representative of industrial boilers because the stack height was low and the stack gas was not heated. The graph showed that changing the stack height changes the emission rates dramatically. The member suggested building in more realistic assumptions for the next analysis. The WG acknowledged that the New Hampshire model is conservative and agreed that there should be a second screening with more realistic assumptions.

Some WG members raised a concern over how the minority report for the HAPs list was titled. The report was titled using EPA, State and Environmental Caucuses although there were only a few individuals that actually contributed to the report. A WG member pointed out that even if all state and environmental caucus members were in agreement, their opinion would still be the minority opinion in the WG. The WG agreed that if there is consensus within an entire caucus, then reports may be titled listing the caucus name. If there is not a consensus within entire caucuses, then the report needs to list the individuals represented instead of the caucus. Other members questioned whether it was appropriate for EPA to sign on to a majority or meeting report. Mr. Eddinger responded that EPA staff are also part of the WG and can represent their views.

2.4 Additional Test Data for Wood Boilers

Mike Soots, with the American Furniture Manufacturers' Association (AFMA) , presented the results of tests on wood-fired boilers. The test summary is provided as attachment 5. Mr. Soots pointed out that the data indicated very low emissions. He also said that the AFMA will be providing fuel specifications for the fuel used at his facility, which is primarily residential furniture and kitchen cabinets. Mr. Soots indicated that AFMA considered clean wood to be any untreated wood combined with no greater than 15% glues or binders. He indicated that they had the fuel analyzed for all 188 HAPs and that this data will be shared with the WG. Mr. Soots said the glues have a high Btu content and that there is data that suggests that the emissions do not increase when they are present in the fuel. One WG member agreed that the data presented was convincing for boilers in this particular industry, but that he does not want to consider all woods as clean because other glues and binders might not act the same. Questions were raised about emissions from boilers burning particle board dust as well as dioxin emissions from wood boilers. Mr. Soots said that the AFMA was considering doing a test on a boiler burning a large percentage of particle board dust. He also said that he would look for any available data on dioxin emissions and share that with the WG. Jim Eddinger of EPA said that EPA had gotten some data on dioxin emissions that will be shared with the WG. Mike Soots agreed to provide Jim Eddinger with the full test reports for the data presented, the data analysis for the fuels, and any information he had on the particular glues and binders that were tested.

2.5 Coordination with Incinerator WG on Regulatory Alternatives Paper (RAP)

Rick Crume, the EPA Co-Chair for the Incinerator WG, gave a presentation on the Regulatory Alternatives Paper (RAP) and its applicability to ICCR boilers covered under Section 129. A handout from the presentation is provided as attachment 6. The Incinerator WG is preparing the RAP, which includes recommendations on subcategories, pollutants, and control alternatives, to assist EPA in preparing its court-ordered white paper on regulatory alternatives. Mr. Crume pointed out that in the applicability section of Section 129, the language does not distinguish between incinerators, boilers or process heaters. The Incinerator WG recommended that all Section 129 subcategories be rolled into one rulemaking with one preamble and the Incinerator WG would be willing to take on a good deal of the work if the boilers are combined

with incinerators in one rulemaking. Mr. Crume also presented the template for how the Incinerator WG will structure the RAP. One WG member endorsed the template put forth by the Incinerator WG. The draft of the Regulatory Alternatives Paper is due at the July CC meeting. Jim Stumbar, Michael Hewitt and Jim Eddinger are currently on the task group that will coordinate with the Incinerator WG on development of the RAP.

2.6 Coordination with the Testing and Monitoring Protocol WG

Tom McGrath, from the Testing and Monitoring Protocol WG (TMPWG), presented some general guidance about the types of information the Boiler WG will have to provide to the TMPWG for any test program. Handouts from the presentation are provided in Attachment 7. Mr. McGrath stated that the WG first has to identify its testing needs and data gaps. Once this is determined, the WG must provide the process parameters to be used, the air pollution control devices to be tested, and the detection limits to use. The WG will also have to determine what process data should be recorded. The type of data that might be recorded includes the make, model, design, burner type, capacity and steam production of the boiler, the fuel composition, and the firing rate. The WG will also need to specify what data pertaining to the air pollution control device should be recorded. Control device data would include such information as the make, model, pressure change, temperature, and surface area per volume. The WG will have to develop a detailed list of all parameters to be measured. The WG will need to develop test matrix containing all process conditions to be tested, such as excess-air, air pollution control device operating conditions, stack parameters, fuel burned, whether to test inlet or outlet conditions, the number of samples to take, the target detection limits, and measurement methods to be used. For all desired conditions such as excess-air and temperature, the WG will need to determine an acceptable range. The WG must also consider different sampling methods such as stack gas samples, fuel analysis, and process samples. Another responsibility of the WG is to determine what type of quality assurance/quality control to use with the testing. The WG will have to review data quality objectives such as accuracy, precision and completeness of the tests. The WG will also have to determine what type QA/QC samples to use including blank and spiked samples. The final step will be to review the costs of the testing plan and the budget to determine if the requested tests can be performed.

The WG discussed forming a small testing program task group to begin working on preparing the information the TMPWG needs. One WG member asked if a contractor could sit in on the task group meetings. Jim Eddinger of EPA said that a member can provide other resources such as a contractor to the process. A WG member suggested that any test program should include looking at fugitive emissions and not just stack tests. David Cooper, with the University of Central Florida, said that the sugar cane industry is already in the process of testing six different boilers at three different facilities. Mr. Cooper stated they had to test now because the facilities shut down for six months a year. He indicated that a test plan was developed, but that it did not contain all of the information outlined by the TMPWG because their program was developed before this guidance was received. The testing plan for the units at sugar cane facilities does include testing for criteria pollutants and HAPs simultaneously. The WG members agreed that each subgroup should provide two volunteers to participate in the testing program task group.

2.7 Good Combustion Practices and Pollution Prevention

John deRuyter reviewed the paper on good combustion practices that was approved by the CC. This paper is provided as Attachment 8. Mr. deRuyter indicated that the examples listed in the paper are meant as methods that may be applicable to specific types of units and it is not meant to be an exhaustive list. The paper also provides examples of how good combustion practices might be approached in the ICCR. Mr. deRuyter suggested that these recommendations on good combustion practices be given to the subgroups to consider on a source specific basis. Mr. deRuyter added that it is still not clear how good combustion practices should be incorporated into a rulemaking. The question was raised as to whether numerical limits were appropriate. Jim Eddinger of EPA responded that the WG needs to define what good combustion practices achieve as a control technique. Another WG member added that the charter of the pollution prevention subgroup will be extended to research alternatives and report back to the CC on how these pollution prevention concepts might be incorporated into the process.

2.8 Status of Economics Task Group

Paul Tucker reviewed the status of the economics task group. Mr. Tucker stated that the group will be matching control technologies with existing cost algorithms. The task group will then confirm the suitability of these existing algorithms. The task group will be looking at the economic analysis on a unit basis instead of a facility basis. The size distribution of the known population will be extrapolated to the unknown population of boilers. All units in the inventory database that do not have control information will be assumed to have no control which will make any cost estimates conservative. Mr. Tucker will forward a summary of the approaches being used by the subgroup to Jim Eddinger who will forward the information to the Economics WG.

2.9 Revised Control Level Summaries

Jim Eddinger of EPA and Roy Oommen of ERG presented: (1) a revised summary of control levels for the various subcategories based on most recent versions of the inventory and survey databases; (2) analysis of model boilers; and (3) a list of the possible number of test reports for each subcategory. A handout from the presentation is provided as attachment 9. As part of the control level analysis, a first cut was taken at separating units that might be classified under Section 129 from those that would be classified under Section 112. This analysis is preliminary and will be changed after EPA's decision on the solid waste definition is made. One WG member commented that waste oil that meets the EPA used oil specifications should not be classified as a Section 129 fuel. Another WG member suggested that for further analysis, some distinction should be made for those units that are less than 10MMBtu/hr. Another WG member said he wanted to wait before making an arbitrary decision to cut out any unit under 10MMBtu/hr without a more definitive rationale. The WG decided to continue the discussion within its subgroups and anyone who has comments on this analysis should forward them to Jim Eddinger of EPA by March 11.

2.10 Other Topics

The WG split into subgroups. Discussions in the subgroups are included in Attachment 10. The WG reconvened in the afternoon and discussed the progress made on subcategories, model plants, and HAP lists. Each subgroup listed the volunteers for the testing

program task group. The task group members from the fossil fuel subgroup will be Bill Freeman and Roy Wood, with Alex Johnson and Gunseli Shareef assisting when they have time. The task group members from the wood subgroup will be Andy Counts and Steve Phelps. Bob Palzer and Mike Soots will sit in when possible. The task group members from the non-fossil subgroup will be Gordon Gaetke and Michael Hewitt.

2.11 Next Steps

The HAP task group will have the refined list of HAPs of interest by the next meeting. The testing program task group will have a preliminary test plan ready to present at the April CC meeting. EPA and ERG will revise the control level summaries and model boiler analysis as per the WG's comments by the next meeting. Jeffrey Roop of the non-fossil subgroup will work with EPA to refine the non-fossil boiler subcategories.

3.0 FUTURE MEETINGS

The next full WG meeting will be on March 24 and 25 in Washington, DC. The meeting will be a full day on March 25 and will conclude on March 25 at 3 o'clock. Other meetings tentatively scheduled for 1998 include: April 30 in Colorado, June 10 in Boston, July 23 in California, September 24 in RTP, NC, and December 10 in Houston. Jim Eddinger and Todd Barker suggested that WG members hold a day and a half open for each upcoming meeting.

BOILER WORK GROUP MEETING

FEBRUARY 26, 1998
WINSTON SALEM, NORTH CAROLINA

DISCUSSION & DECISIONS

- Ruth Mead updated the Work Group (WG) on the status of the inventory, survey, and emissions databases. The inventory database has been released and is on the Technology Transfer Network (TTN). A CD is available for purchase for $60. The survey and emissions databases will be posted to the TTN the first week of March.

- Jim Stumbar reviewed the discussions and directions from the Coordinating Committee meetings. Mr. Stumbar stated that the Boiler WG will make a presentation to the Coordinating Committee in April on hazardous air pollutants (HAP's) of interest and pollutants for testing.

- Wendell Brough and Andy Bodnarik presented the plan for completing work on the HAP's of interest list. They will work to finalize the list prior to the March meeting.

- The WG concurred to create a task group that would identify the preliminary list of pollutants to be tested and develop a preliminary testing program. The task group will try to develop products for the April Coordinating Committee meeting. The testing task group will work on the draft test program concurrently with work done by the HAP's of interest task group, but will incorporate the results of the HAP's of interest task group in their plan. The members of the task group are: Mike Hewett, Gordon Gaetke, Gunseli Shareef, Roy Wood, Alex Johnson, Bill Freemen, Andy Counts, and Steve Phelps.

- Tom McGrath of the Testing and Monitoring Protocols WG made a presentation on procedures to follow and information needed to develop a testing program.

- Mike Soots presented test information on wood fired boilers in the industry he represents. Mr. Soots agreed to provide copies of the test reports to EPA.

- Rick Crume from the Incinerator WG made a presentation on work the Incinerator WG was doing to meet statutory and legal deadlines. Mr. Crume discussed how sources in the Boiler WG may fit into analyses and documentation the Incinerator WG was conducting. Members of the Boiler WG agreed that it was a good idea to use fact sheets developed by the Incinerator WG as templates.

- The members of the WG agreed that reports from the WG to the Coordinating Committee should generally have names of individuals. If it is clear to the WG that other parties (e.g., State or Environmental Caucus) have officially taken a position on an issue, then the party could also be listed. The members of the boiler WG agreed to be sensitive to this concern on a case-by-case basis.

- Paul Tucker updated the WG on the status of the economics task group. A summary of the status will be forwarded to the Economics WG.

- Good combustion practices were discussed. Next steps for the subgroups will be to review how good combustion practices can be incorporated in their industries.

- An update was provided on the status of recent pollution prevention meetings. Additional pollution prevention meetings are planned to discuss operator training, and input and output based practices. Representatives of the pollution prevention subgroup requested members of the Boiler WG to provide comments on how input and output based practices can be incorporated.

- Jim Eddinger of EPA presented the re-analysis of the control levels for boilers using the survey and inventory databases, a summary of the number of boilers that could be associated with previously developed model plants, and a summary of test information in the emissions database and potentially available from the survey responses. Members of the WG had many questions and comments. Members agreed to provide specific comments to EPA on the analysis by March 11.

ACTION ITEMS

- An alert will be sent to members indicating the number of boilers in the latest version of the inventory database. The alert will also indicate the number of fossil fuel, wood, and non-fossil boilers.

- Wendell Brough and Andy Bodnarik will work to finalize the HAP's of interest list prior to the March meeting.

- WG Members agreed to provide specific comments to EPA on the revised level of control, model plant, and test information analysis by March 11.

NEXT MEETING

- The next meeting will be March 24 and 25 in Washington D.C. On March 25th, the meeting will end at 3 pm.

- Future meetings planned are April 30 in Fort Collins, Colorado, June 10 and 11 in Boston, July 30 in California, and September 24 in RTP, NC.

- The testing task group scheduled a teleconference for Thursday, March 5.

- EPA will schedule future meetings for the economics task group and control technologies task group.

FOSSIL FUEL SUBGROUP MEETING

(February 26, 1998)

ATTENDEES

Wendell Brough	Mark Bryson	Stanley Carter	John deRuyter
Gerald Doddington	Bill Freeman	Alex Johnson	Miriam Lev-On
Ruth Mead	Christy Presson	Gunseli Shareef	Roy Wood

DISCUSSIONS AND DECISIONS

- Gunseli Shareef, Wendell Brough, Mark Bryson and Alex Johnson will remain active with the HAPs of Interest ad-hoc group. This group expects to have recommendations for the fossil fuel subgroup to review by the March WG meeting.

- There was some discussion about the applicability of some of the available test data for fossil fuel boilers. Alex Johnson suggested that the subgroup confirm that test data from the utility HAP study is applicable to ICCR sources.

- Miriam Lev-On said that the WSPA API data contains test information on 17 boilers firing gas, light oil or crude/residual oil. If ERG/EPA does not have these electronically, she said they would provide this.

- The subgroup nominated members to participate in the testing program ad-hoc group. Bill Freeman of API and Roy Wood, with Kodak, will be members of the ad-hoc group. Alex Johnson and Gunseli Shareef agreed to provide additional support when they were able.

- John deRuyter reviewed the work he had done with ranking controls in the inventory database according to HAP control efficiencies. He had only worked

with the gas-fired units in the inventory. He ranked the controls according to no effect, insignificant effect and good combustion practice techniques. He indicated that the MACT floor for gas-fired units looked like it would be no control with good combustion practices as an alternative.

- Alex Johnson pointed out that the group must be careful when ranking controls because some NOx controls have a possible correlation with an increase in HAPs.

- There was also some discussion about the MACT floor and MACT being a numerical limit as opposed to just good combustion practices or a particular add-on control. Ruth Mead pointed out the EPA generally prefers not just an add-on control but a numerical limit so that facilities can use innovative technology to meet the limit.

- John deRuyter and Stanley Carter will do further review of the control devices for each fossil fuel subcategory. This analysis will be done on version 3.0 of the Inventory database. John deRuyter also requested that EPA provide lists of unique controls along with the number of sources using each control. John deRuyter will communicate further with Jim Eddinger on the format needed to do this analysis.

- The subgroup decided to review GRI reports to determine if there are any natural breakpoints by size that could also be incorporated into the control device analysis and model plants. John deRuyter will discuss this further with Jim Eddinger and ERG to determine what sizes, if any, should be broken down.

- Alex Johnson suggested looking at manufacturer's data for units less than 10MMBtu/hr to determine if there is anything unique about the boilers in this size range so that a rationale could be provided for any size cuts chosen.

- The subgroup briefly discussed pollution prevention and what has come out of the pollution prevention subgroup. John deRuyter stated if operator training became part of the process, he would like to see it in the form of state agencies approving facility-developed programs. Alex Johnson said the pollution prevention subgroup was still looking at areas such as energy efficiency, steam management, incentive-type programs and fuel substitution.

ACTION ITEMS

- Wendell Brough will review Andy Bodnarik's changes to the HAP's of interest with Gunseli Shareef, Frank Ferraro, Mark Bryson and Alex Johnson. When this group has refined the list, the group will review this list with Tom McGrath of the Testing and Monitoring Protocols WG to determine if there are cost reasons for HAPs to be added or deleted from the list. This list will then be handed over to the new testing program ad-hoc group.

- John deRuyter requested a new list of unique control devices for each fossil fuel boiler subcategory based on Version 3.0 of the inventory database so that he and Stanley Carter can begin to rank these for HAP removal efficiency. He requested that the information contain the number of sources with each control device and possibly some size breakdowns. He will discuss the format further with Jim Eddinger and ERG.

- Alex Johnson requested that the next version of the control level summary include not just the percentage of units that have baghouses, ESPs, etc., but also include the total number of sources that have each of these general control devices.

- The subgroup requested that EPA redo the preliminary MACT analysis on the new version of the emissions database.

- The HAPs of interest subgroup will have recommendations for the fossil fuel subgroup to review at the March WG meeting.

NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

NON-FOSSIL FUEL SUBGROUP MEETING

(February 26, 1998)

ATTENDEES

Roy Oommen	Todd Barker	Mike Blumenthal	Andrew Bodnarik
David Cooper	Gordon Gaetke	Michael Hewett	Coleman Kavanaugh
David Marrack	Jeffrey Roop	Jim Stumbar	Prakasam Tata
Paul Tucker			

DISCUSSIONS AND DECISIONS

- Members discussed the testing task group and who should be on it. The subgroup nominated Gordon Gaetke and Mike Hewett to be on the task group. The members also requested that EPA take a strong lead role in the task group.

- Members agreed that the subcategories developed at the previous meeting were too specific. Jeffrey Roop volunteered to work with EPA in revising the subcategories for the next meeting.

- Members noted that a HAP's of interest list has not been developed for the non-fossil non-wood fuels. Catherine Beahm volunteered to develop draft lists (for 112 and 129 sources) for the March meeting based on previous work done by Jim Stumbar, lists in the Act, and pollutants being regulated in other standards, such as the boiler and industrial furnaces standard.

ACTION ITEMS

- Catherine Beahm will draft a preliminary HAP's of interest list for non-fossil fuels prior to the March meeting.

- Jeffrey Roop and EPA will develop revised subcategories for non-fossil boilers for the March meeting.

NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

WOOD SUBGROUP MEETING

(February 26, 1998)

ATTENDEES

Delbert Cline	Jim Eddinger	Frank Ferraro	Chad Leatherwood
Bob Palzer	John Pinkerton	Mike Soots	Stephen Smith
Vladimir Zaytsef			

DISCUSSION AND DECISIONS

- Members of the wood subgroup decided to divide wood-fired boilers into subcategories based on fuel type and the regulation that would affect each source. These categories are as follows:

  Section 112 boilers: dry wood products
  timber products

  Section 129 boilers: dry wood products
  timber products
  treated wood products

- Within these 5 subcategories, the members of the group decided to conduct an analysis that will evaluate boiler population, air pollution control device use, and size distribution. This analysis will use the ICCR survey database and will evaluate these parameters for boilers firing: (1) greater than 90 percent of the listed wood products, and (2) boilers firing greater than 50 percent of the listed wood products.

- Members of the subgroup decided to change the boiler description of all the model plant boilers to stokers instead of the specific description of spreader-

stokers. This decision was made so that other types of stoker boilers would be included in the model boiler analysis.

- The subgroup nominated Andy Counts and Steve Phelps to the testing task group. Bob Palzer noted that he would like to be allowed to participate with the testing task group when he has availability but he does not have the time to be a full member.

- Vladimir Zaytsef volunteered to become a member of the Add-on Control Device Subgroup.

ACTION ITEMS

- EPA will re-evaluate control levels and number of boilers associated with model plants based on suggested changes made by the subgroup.

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NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

ATTACHMENT

Full Work Group Attendance List

Todd Barker	Catherine Beahm
Michael Blumenthal	Andrew Bodnarik
Wendell Brough	Mark Bryson
Stanley Carter	Delbert Cline
David Cooper	Rick Crume
Kim Davis	John deRuyter
Jon Devine	Gerald Doddington
Jim Eddinger	Frank Ferraro
Bill Freeman	Gordon Gaetke
Michael Hewett	Brian Holmes
Alex Johnson	Coleman Kavanaugh
Miriam Lev-On	Chad Leatherwood
David Marrack	Tom McGrath
Ruth Mead	Roy Oommen
Bob Palzer	John Pinkerton
Fred Porter	Christy Presson
Jeffrey Roop	Gunseli Shareef
Stephen Smith	Mike Soots
James Stumbar	Prakasam Tata
Paul Tucker	Roy Wood
Vladimir Zaytseff	

Attachment 1

Meeting Agenda

INDUSTRIAL COMBUSTION COORDINATED RULEMAKING
BOILER WORKGROUP
DRAFT AGENDA
FEBRUARY 26, 1998

Adam's Mark Hotel Winston Plaza
425 North Cherry Street
Winston-Salem, NC

Major Meeting Objectives

- Debrief and discuss the CC meeting, especially any guidance provided by the CC to the WG.
- Further refine MACT floors and subcategories based on analysis performed by EPA.
- Better understand the information needed by the Economics Workgroup.
- Be informed of the Incinerator Workgroup's progress in developing regulatory alternatives for ICWI/OSWI and discuss coordination between the Incinerator and Boiler Workgroups.
- Begin discussion of data gaps and testing needs.

Documents Posted To The TTN For This Meeting

Draft Agenda

8:00 a.m.	Review agenda, major meeting objectives, and Boiler WG milestones
8:15 a.m.	Overview of CC Meeting including guidance & feedback to the Boiler WG
9:15 a.m.	Status of Databases
9:30 a.m.	Break
9:45 a.m.	Presentation and discussion of revised MACT floors (Jim Eddinger and Roy Oommen)
10:45 a.m.	Status report from Boiler Ad Hoc Economic Group
1:00 a.m.	Presentation by Incinerator Workgroup Regarding Regulatory Alternatives for ICWI/OSWI (Incinerator Workgroup Representative)
	Discuss coordination between the Boiler and Incinerator Workgroups.
12:00 p.m.	Status Report on Good Combustion Practices (Bill Freeman)

12:15 p.m. Lunch

1:15 p.m. Discuss Pollution Prevention Guidance to Workgroups from the CC

1:45 p.m. Subgroup Meetings

- Subgroups, based on MACT floor analyses performed by EPA, should further refine MACT floors and subcategories and begin identifying data gaps and testing needs.

3:45 p.m. Reconvene Boiler Workgroup - Subgroup Reports

4:15 p.m. Next Steps

- Review flash minutes and major meeting objectives
- Identify March agenda topics & discuss lengthening the meeting by ½ day

4:30 p.m. Adjourn

Attachment 2

Full Work Group Attendance List

Full Work Group Attendance List

Catherine Beahm
Michael Blumenthal
Andrew Bodnarik
Wendell Brough
Mark Bryson
Stanley Carter
Delbert Cline
David Cooper
Andy Counts
John deRuyter
Jon Devine
Gerald Doddington
Sharon Druscher
Jim Eddinger
Frank Ferraro
Bill Freeman
Gordon Gaetke
Greg Gesell
Michael Hewett
Robert Kaufmann
Coleman Kavanaugh
Miriam Lev-On
David Marrack
Ruth Mead
Bob Palzer
Steve Phelps
John Pinkerton
Christy Presson
Jeffrey Roop
Glenn Sappie
Gunseli Shareef
Jocelyn Siegel
Mike Soots
James Stumbar
Mark Stokes
Prakasam Tata
Paul Tucker
Roy Wood
Vladimir Zaytseff

Attachment 3

Status Report and Coordinating Committee Update

ICCR BOILER WORK GROUP
STATUS REPORT

Prepared by:
Dr. James P. Stumbar
stakeholder cochair

February 13, 1998

Introduction

The boiler work group (BWG) consists of three subgroups: fossil fuel, wood, and nonfossil fuel This is a breakdown following the type of material burned within the boiler. The fossil fuel subgroup handles boilers firing natural gas and gases derived from fossil fuels such as liquid petroleum gas and refinery gas, distillate and residual fuel oils and coals. The wood subgroup handles boilers firing clean wood and treated wood. The nonfossil fuel group handles boilers that burn anything else such as digestor gas, landfill gas, bagasse, biomass, scrap tires, processed engineered fuels, etc. The different types of material burned creates a complex situation for the BWG. The BWG has some equipment that will be regulated under Section 112 and some equipment that will be regulated under Section 129. The BWG is the largest group within the ICCR process and contains the most varied representation by stakeholder interests. Due to this complexity progress has been uneven. Some of the groups have proceeded further than others. In general, the BWG lags behind the other work groups due to many factors. Several factors contribute to this slower progress and most of us in the ICCR process share the responsibility for this slow progress. The USEPA has contributed by not providing timely information. Work group members have been hesitant to move forward when information was lacking. Different stakeholder concerns and interests sometimes holds up progress over issues which seem minor. Perceived "micromanaging" by the Coordinating Committee has sometimes contributed to the hesitancy of the group members to move forward.

Accomplishments & Progress

Although the process has been slow, the boiler work group has made significant progress in many areas. Following coordination committee recommendations, the BWG has instituted procedures to come to more rapid closure on important issues. To insure progress, work group members are asked to take responsibility to gather required information and present the information to the entire work group and the affected subgroup. Target deadlines are now set to cutoff debate and move forward passing unresolved issues to the coordinating committee for timely resolution.

Major accomplishments are as follows:

The boiler work group was responsible for convincing the coordinating committee of the need for a good waste definition and contributing people to work on the ad hoc group formed by the coordinating committee. This definition is now being finalized by the USEPA. The WG has given its comments on errors and gaps in the ICCR inventory database. The BWG is presently addressing the issues of HAPs of concern, testing requirements, MACT floor, boiler subcategories, Model boilers, applicability of Section 112 and Section 129, good combustion practices and pollution prevention as follows:

HAPs of concern/testing requirements--

The BWG reached closure on lists of HAPs of concern and recommendations for HAPs for testing have been developed for "natural gas", distillate fuel oil, residual fuel oil, clean wood and coal. Majority and minority reports and recommendations are being presented for discussion during the present February session of the coordinating committee. HAPs lists for "waste wood" and nonfossil

fuels including digestor gas, landfill gas, bagasse, etc.are still being developed. These lists will be discussed during the BWG meeting of February 26, 1998.

Boiler testing requirements will also be discussed during this meeting.

MACT floor--
The BWG has started into discussions to determine the preliminary MACT floor. The EPA has presented a list of control devices identified in the database for various boilers. Work group members were asked to rate the effectiveness of various control devices.

Boiler Subcategories--
Each subgroup has made attempts to subcategorize boilers applicable to their groups. Prior to the January meeting, the fossil fuel subgroup had identified sixteen (16) subcategories related to fuel and boiler types; the wood subgroup had identified fifty seven (57) subcategories and the nonfossil fuel subgroup had identified two hundred and three (203) potential subcategories. The total number of subcategories was obviously intractable. During the January meeting, each subgroup reexamined these subcategories, the fossil fuel group retained sixteen (16) subcategories, the wood subgroup reduced their subcategories to about thirty four (34) and the nonfossil subgroup reduced their subcategories to about twenty five (25). The large number of subcategories is due to the great differences in equipment types combined with significant differences in the fuel characteristics. The BWG will continue to reduce subcategories as further information is processed or becomes available.

Several issues arose during the discussion of subcategories as follows:

- There is a need to address the issue of cofiring wastes and fuels. Many stakeholders favor the concept of a deminimus.
- There is an urgent need for resolution of the "waste definition" since waste fuels will be subject to Section 129 requirement.
- Into which subcategory does one place a boiler which cofires two or more fuels. Guidance must be developed.
- What size boiler should be designated as a reasonable cutoff for those regulated under Section 112?

Model Boilers--
The nonfossil subgroup has made considerable progress in identifying model boilers due to input from member stakeholders concerning their boiler equipment. Sixty seven model boilers have been listed for the first cut.

The issue of cofiring becomes obvious. Some boilers cofire up to four different fuels with no fuel exceeding 35% of the total heat input.

Applicability of Section 112 or Section 129--
Categorization into boilers regulated under Section 129 is needed quickly. The BWG needs prompt action on the definition of a "waste" and the issue of a deminimus for cofiring is very important for establishing proper subcategories.

Coordination with Incinerator Work Group--
The BWG is coordinating Section 129 issues with the incinerator work group and will be prepared to work with them in meeting the schedules.

Pollution Prevention--
The BWG has representatives on the coordinating committee's ad hoc pollution prevention group.

Good Combustion Practices--
The BWG has started to interact with the Process Heaters Work Group to define good combustion practices. The process heater approach and their preliminary guidance were discussed during the January meeting. Two work group members volunteered to actively participate in the process heater committee that is developing the good combustion practice recommendations.

An issue arising from application of good combustion practice is the possible designation of good combustion practices as the MACT floor for gas and distillate oil fired boilers.

Economics--
Members of the economics work group made a presentation to the boiler work group to present the needs for cost information to establish final MACT determinations and the economical degree of control below the MACT floor.

February Meeting--

- Debrief and discuss the CC meeting, especially any guidance provided by the CC to the WG.
- Further refine MACT floors and subcategories based on analysis performed by EPA.
- Develop better understanding of information needed by the Economics Work Group.
- Be informed on the Incinerator Workgroup's progress in developing regulatory alternatives for ICWI/OSWI and discuss coordination between the Incinerator and Boiler Work Groups.
- Begin discussion of data gaps and testing needs.
- Come to closure on HAPs lists for nonfossil fuels.

SUMMARY OF COORDINATING COMMITTEE ACTIVITIES
FEBRUARY 24 & 25

Presented to the Boiler Work Group by James P. Stumbar
February 26, 1998

EPA Responses to CC Requests

POM - Polycyclic Organic Matter definition--
EPA has not adopted a single uniform definition of POMs. Three lists have been used to "measure" POMs

- Seven (7) carcinogenic polyaromatic hydrocarbons (PAH)
- Sixteen (16) PAHs including naphthalene
- Extractable Organic Matter (EOM)

EPA has decided that for any given source category the most appropriate list will be selected

Coordinating Committee Reports on combustion turbines, RICE and ***waste definitions***.

EPA has accepted the majority report on combustion turbine pollutants for testing.

EPA has accepted the majority report on RICE test plans and pollutants and it will fund the shortfall.

Solid Waste Definition--
The agency has decided that a definition of solid waste for the purposes of Section 129only is required. The structure of the definition is to follow the report from ICCR. Present thinking at the staff level is as follows:

- Any solid, semisolid, sludge, liquid or contained gas is a solid waste.
- Exclusions include: fuel with energy-recovery; materials burned for the purpose of recovering chemicals
- A comparable fuels exclusion is being considered but there is no concensus

At the staff level there is consensus on listing the following as fuels:
natural gas; fuel oils (distillates and residual), coals and clean wood

On chemical recovery - the three (3) materials listed in the Ad Hoc report are presently excluded.

The staff feels that comparable fuels deserves attention. They will flesh-out a position and bring this forward to management. Comparable fuels philosophy followed in hazardous waste management will be a useful starting point.

Note that the agency found that the ICCR recommendations were helpful to the agency because they provided good rationale. Any recommendation that is sent to the agency through the Coordinating Committee <u>MUST INCLUDE ADEQUATE RATIONALE</u>.

BOILER WORK GROUP

The boiler work group status report was well received by the Coordinating Committee. A company of this report has been distributed to the BWG attendees this morning.

Major Issues

HAPs of Interest--
Prior to the Coordinating Committee meeting, BWG members representing the majority and minority opinions held a series of discussions in an effort to find common ground. These members decided that there was a high probability that the positions could be brought closer together. These people also found that there were deficiencies centering around important definitions that should be discussed. Subsequently, the EPA Cochair Jim Eddinger and the Stakeholder Cochairs Jim Stumbar and Mike Hewett decided that the Group should present the two HAPs report as a status report. Following discussion with available Work Group Members the Boiler Work Group also promised that if the CC would allow the withdrawal of the reports, the Boiler Work Group would return to the April meeting with a proposed test program. This program will integrate the revised HAP positions into it. Further progress on reconciling the positions has been made and Wendell Brough will give the details during the meeting.

Test Program--
Following discussion with the members of the Work Group, the Cochairs have recommended the use of subgroups charted to perform the required tasks: The HAPs subgroup; The Testing Protocol subgroup; and the Control Technologies Data Gap subgroup. Functions of these groups are presented in the Attachments.

Section 129 Coordination with Incinerator Work Group--
The incinerator work group needs section 129 subcategories to be transmitted to the Incinerator Work Group before March 12. Due to the legal requirements and the incomplete resolution of the waste definition, it is necessary to make a preliminary guess so as to move the process forward. The incinerator work group has presented templates to fill in necessary MACT Floor information, possible alternatives above the floor and other necessary information. There will be a presentation during this BWG meeting to address this issue.

Pollution Prevention

The P2 subgroup presented their findings to the coordinating committee. Findings included input based actions, output based actions and actions associated with good combustion practices. The P2 group continues to work on the input and output based actions. The good combustion practice document will be sent to the source work group for further consideration.

Economics Work Group

The CC adopted the recommendation that the base year for economic analysis will be 2005 and that all cost data will be presented in 1998 real dollars. The economics WG is still considering the appropriate discount rate.

Note that approach to economics must be developed through dialogue between the individual source groups and the economics work group.

Small businesses

Fred Porter reminded the CC that the ICCR has had problems with small business representation and solicited ideas to promote greater participation.

Databases

Inventory Data Base version 3--
The data base has been broken into five source catergories and can be downloaded from the TTN. A CD ROM version is available for purchase at $60.

Emissions Data Base--
This data base compiles emission data from source data reports. Version 2 will be released in the next week or two. This includes fifty (50) additional test reports on boilers and process heaters.

Survey Data Base--
This data base will be issued next week. The scanning and keypunch errors have been corrected. A CD ROM giving every survey will be available.

Process Heater Reports

The CC adopted a recommendation that direct-fired heaters that are covered by their own MACT will be dropped from consideration. The CC added language to recommend the such items as environmetal justice, pollution prevention, etc. be addressed when developing the MACT. EPA will take responsibility.

LESSONS LEARNED FROM MACT DEVELOPMENT PRESENTATION

The process heater work group presented a report which developed the percentage of gas and oil-fired heaters that actually had add-on controls. The report had some deficiencies which produced confusion and an inconclusive result. THE BOILER WORK GROUP SHOULD TAKE PRECAUTIONS TO NOT FALL INTO THE SAME TRAP.

- Each presentation from any work group member should state the objectives of the report clearly and precisely.
- Each presentation should use proper definitions to delimit and clarify important aspects. Examples included: fuel definitions, equipment definitions
- Each presentation should strive to present the minimum amount of information required to produce a strong case.
- Each presentation must have a complete list of pertinent recommendations for the committee to take action.

MACT FLOOR EXERCISE

During a meeting of the source work group cochairs and points of contact, an issue that was of interest to all work groups (a cross-cutting issue) was brought before the coordinating committee to elicit ideas. The issue dealt with the establishment of a MACT floor for subcategories where:

- The emissions are low but may have high scatter
- Attempts to correlate the causes of the scatter were unsuccessful
- There are no available add-on controls

The CC plus public were asked to break into groups to brainstorm about this issue. Results were interesting.

Example MACT floor determination ideas:
No MACT floor and no numerical limit
MACT floor with a numerical limit taking an average
Use of various good combustion practices
CO monitors or Oxygen monitors
No CEMs
In-house training
Yearly tune-up
Further testing required
Time constraints may preclude further testing.

Boiler work group likely to encounter this dilemma when considering gas-fired and oil-fired equipment.

HAPS SUBGROUP RESPONSIBILITIES

- Reconcile definitions
- Define differences in positions and seek common ground
- Develop HAPs of interest for:

Fossil Fuels/fossil derived - natural gas. Process gases, well head gas, fuel oil, coal
Wood - "clean" wood, treated wood (assume Section 129)
Non fossil fuels - bagasse, biomass, digester gas, landfill gas, scrap tires, process engineered fuels, plastic/paper laminates, paper sludge. Subgroup to take into consideration input from appropriate stakeholders.

- Develop issue of HAPs/criteria pollutants for Section 129
- Bring issue of criteria pollutants to closure
- Provide results to testing Program Subgroup.

TESTING PROGRAM SUBGROUP RESPONSIBILITIES

- Develop Template for a Complex Unit and list data collection requirements
- List recommended test protocols including recommended testing conditions
- Integrate information form HAPs subgroup and develop lists of HAPs to be tested in conjunction with HAPs subgroup
- Identify data gaps correlating these gaps with subcategories and fuel types
- Integrate information from Add-On Control device subgroups
- Develop test cost information
- Develop test programs for at least five different subcategories
- Prioritize testing activities
- Provide recommendations
- Note that the bagasse industry is conducting its own test program. Gather written report of this activity from Dave Cooper

Note: active participation of TMWG member is a requirement

ADD-ON CONTROL DEVICE SUBGROUP RESPONSIBILITIES

- List add-on control devices for HAPs control
- Assess device effectiveness on various HAPs
- Correlate device usage with subcategories
- Provide input to the Test Program Work Group

Prepared by:
James P. Stumbar
February 25, 1998
for guidance to the BWG

ATTACHMENT 4

New Hampshire Screen Test Graph

[Electronic copy in Adobe.PDF and is available on the TTN and hard copy is available in the Docket]

ATTACHMENT 5

Additional Wood Test Data

[Not available electronically. Copy is available in the docket.]

ATTACHMENT 6

Generic HAPs Emission Measurements
Test Plan Development

Generic HAPs Emission Measurements
Test Plan Development

ICCR Boiler Work Group
February 26, 1998

1. Identify testing needs/data Gaps-objectives.

   - Process - capacity, design, fuel
   - APCDs - type, design
   - HAPs - detection limits

2. List process data to be monitored, measured, and/or recorded

   - Facility - make, model, design, burners, temperature capacity, steam production, etc.
   - Maintenance history
   - Fuel - composition, firing rate
   - Develop data sheets

3. List APCD parameters to be monitored, measured, and/or recorded

   - Make, model, etc.
   - Maintenance history
   - Baghouse - SA/Vol, DP, temperature, etc.
   - ESP - plats SA/Vol, charge, temperature, etc.
   - Scrubber - Dp, temperature, liquor flow and pH, etc.
   - Develop data sheets

4. Develop test matrix

   - Process conditions - load, excess air, etc.
     - target acceptable range

- APCD operating conditions - target, acceptable range
- HAPS measurements
    - stack or fuel
    - location - APCD in and out
    - number of samples
    - sampling duration/schedule
    - target detection limits
    - measurement methods and target HAPs

5. Measurement methods

- Sampling methods
- Stack gas
- Fuel
- Process samples
- Analytical methods
    - Methods selection must consider target HAPs, detection limits, sampling conditions, interferences, etc.

6. QA/QC

List data quality objectives (DQO) for each measurement method

- Accuracy
- Precision
- Representativeness
- Completeness
- List QA/QC samples for each measurement method
- Blocks, spike samples, audits, etc.
- Data quality indicator to determine whether DQOs are met

7. Review Costs and Budgets

- Site specific quality assurance Project Plan
- Site visit - check sampling locations
- Process description
- Site specific information
- Developed from generic test plan

ATTACHMENT 7

Incinerator WG Presentation on Regulatory Alternatives Paper (RAP)

Presentation to the BWG on . . .

BWG and IWG COORDINATION

Rick Crume
Norm Morrow
Incinerator Work Group

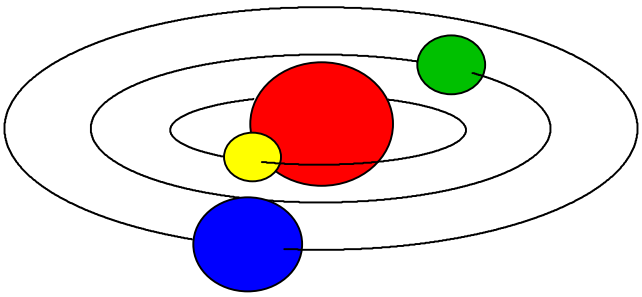
February 26, 1998

OVERVIEW OF PRESENTATION

Background on Section 129 and ICWI/OSWI

The RAP

Suggestions for Coordination

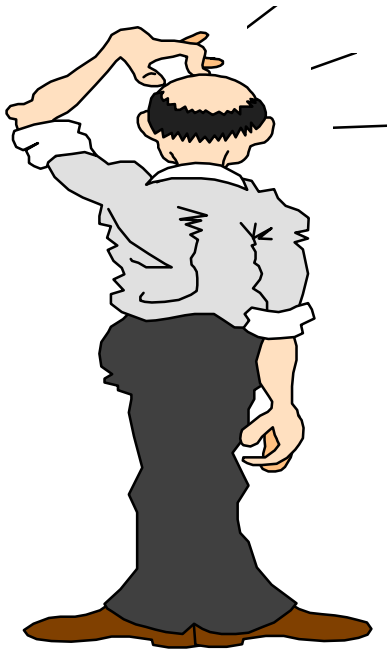


WHAT DOES SECTION 129 APPLY TO ?

- *Solid waste incineration units combusting commercial or industrial waste* **[ICWI]** . . . *129(a)(D)*

- *Other categories of solid waste incineration units* **[OSWI]** . . . *129(a)(E)*

- MSW, HMIW



IMPLICATIONS FOR BWG ?

- Section 129 Solid Waste Incinerator Definition:

  The term "solid waste incineration unit" means a distinct operating unit of any facility which combusts any solid waste material from commercial or industrial establishments or the general public . . . 129(g)(1)

- Definition includes boilers and process heaters (*Any solid waste* has yet to be defined)

ICWI AND OSWI CATEGORIES

(December 28, 1994 FR Notice)

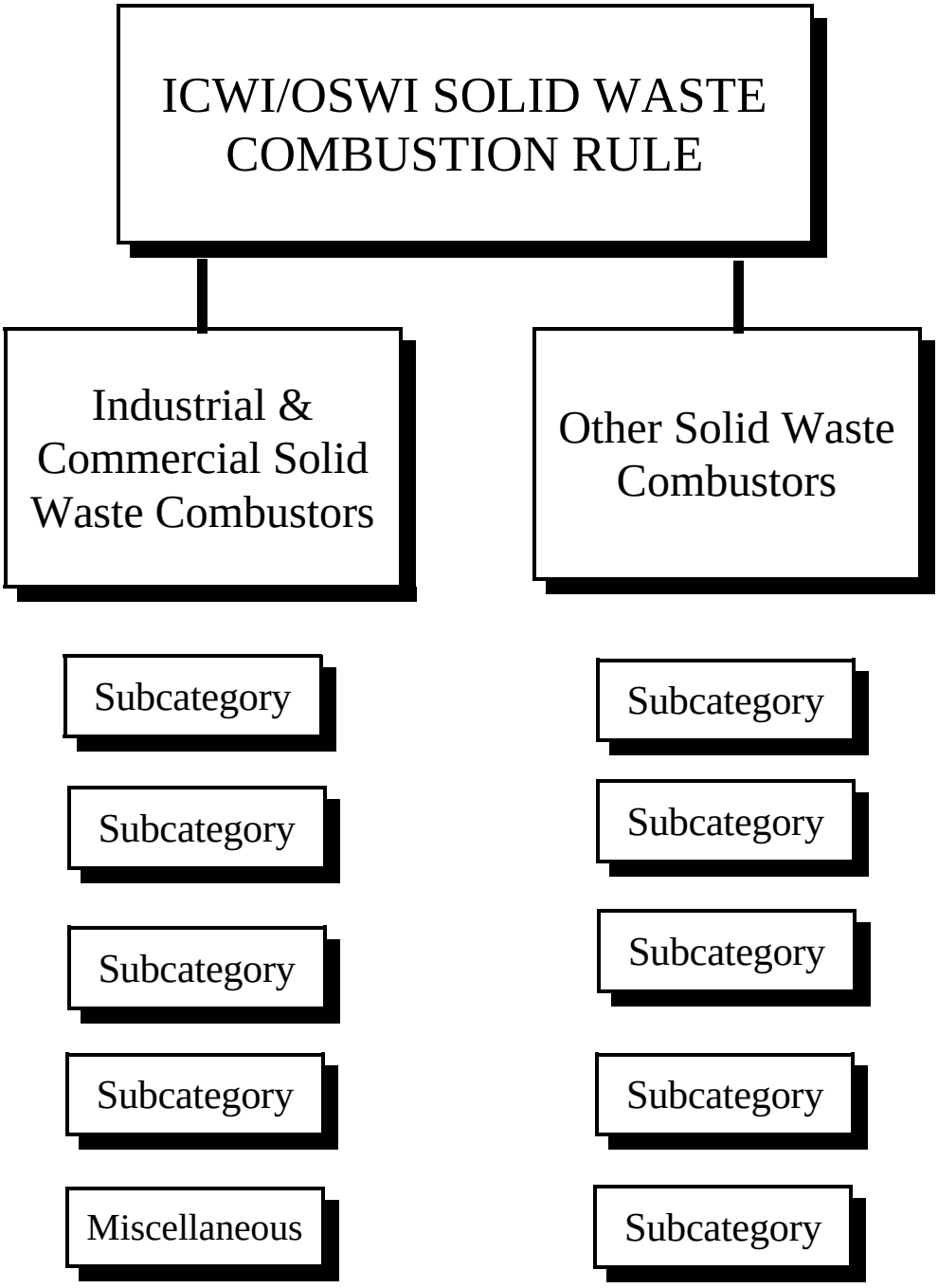
OSWI CATEGORIES

1. MWC's with plant capacities less than 35 Mg/day
2. Residential incinerators
3. Agricultural waste incinerators
4. Wood waste incinerators
5. Construction and demolition waste incinerators
6. Crematories
7. Contaminated soil treatment facilities

ICWI CATEGORIES

"All other incinerators [excluding large MWCs and MWIs] *burning solid waste other than what has been defined above, are probably industrial and commercial waste incinerators* [ICWIs]*."*

POSSIBLE SECTION 129 REGULATORY FRAMEWORK



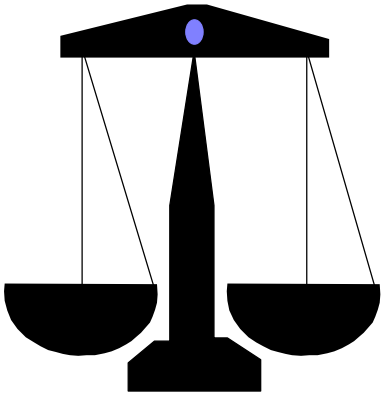
ICWI CONSENT DECREE DATES

Complete ICR data entry
October 15, 1997

**Develop regulatory alternatives "white paper"**
November 16, 1998

Proposal
November 15, 1999

Promulgation
November 15, 2000



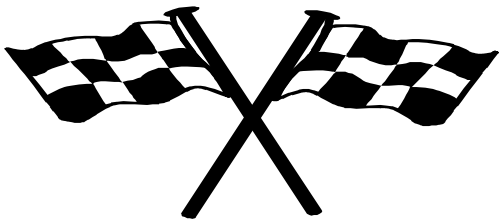
WHAT'S THE RAP?

*(**R**egulatory **A**lternatives **P**aper)*

- Recommended **subcategories**, **pollutants**, **and control alternatives** for ICWI/OSWI

- EPA to consider RAP in drafting its "white paper"

- IWG to take the lead, with assistance from BWG



- Draft due at **July** CC meeting

RAP FORMAT

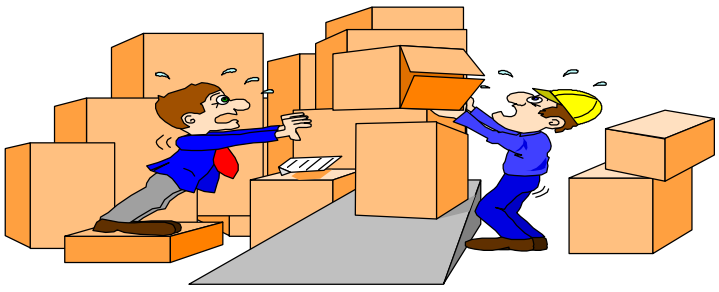
- Introduction, background, and applicability

- **Subcategory characterizations and regulatory alternatives**

- Issues and needs (optional)

- Steps taken to implement statutes and executive orders (optional)

- **Appendix -- subcategory definition sheets**



DRAFT OUTLINE
REGULATORY ALTERNATIVES PAPER

February 13, 1998

FORMAT: Transmittal letter and attached paper with appendix, two-sided, single-spaced, times new roman, 12 pt.

Transmittal Letter *(one page) — John Devine*

1.0 INTRODUCTION *(one to two paragraphs) — Rick Crume*

- **#** Brief introduction to the ICCR and the IWG (figure of ICCR organization).
- **#** Purpose and organization of this document.
- **#** (Explain that the RAP represents an intermediate step in the standards development process and work continues.)

2.0 BACKGROUND *(three to four paragraphs) — Rick Crume*

- **#** Review of approach taken to develop regulatory alternatives and progress made to date (figure of subteam organization).
- **#** Overview of anticipated regulatory framework, including distinction between ICWI and OSWI (figure of potential regulatory structure).
- **#** Brief review of evolution of solid waste definition.
- **#** (Explain that some subcategory and regulatory alternative characterizations are incomplete and that revisions and refinements will continue as new information is received (e.g., from source tests); specific needs and issues will be summarized in the subcategory characterizations presented below.)

3.0 APPLICABILITY *(two or three paragraphs) — Rick Crume and Jim Eddinger*

- **#** Subcategories and any groupings within subcategories (list or table).
- **#** Applicability to miscellaneous wastes (e.g., <30% MSW, <10%HMIW, and any undefined or unknown wastes).
- **#** Restatement of what is not covered (e.g., RCRA, MWC, and HMIWI units).
- **#** Basis for deciding which boilers and process heaters to include.

4.0 SUBCATEGORY CHARACTERIZATIONS AND REGULATORY ALTERNATIVES *(separate one- to two-page summary sheets for each subcategory or subcategory grouping) — IWG subteams/BWG subgroups*

- # Subcategory characterizations and emission control options (including pollution prevention) to be summarized in an appendix, with a separate summary sheet for each subcategory or subcategory grouping.
- # The information in the appendix will be summarized in a table (see attached example) — *Rick Crume and Jim Eddinger.*

5.0 ISSUES AND NEEDS *(several paragraphs) — Norm Morrow and Jim Stumbar*

- # Summary of the issues and needs that we are facing (e.g., lack of emissions test data for some subcategories), the steps we are taking to address these issues and needs, and any possible delays to our schedule.
- # (This section will ensure that the CC understands the challenges we face in developing standards for a large number of subcategories over a relatively short time period.)

6.0 STEPS TAKEN TO IMPLEMENT STATUTES AND EXECUTIVE ORDERS *(several paragraphs) — John Devine*

- # Review of the steps being taken by the IWG and/or the CC to address the various statutes and executive orders, including provisions covering pollution prevention, environmental justice, public participation, and small business impacts.
- # (This section will ensure that the CC is aware of the steps we are taking to implement the statutes and EOs. If there are any problems with our approach, we want to learn about them far enough in advance of proposal to make adjustments.)

EXAMPLE SUBCATEGORY CHARACTERIZATION AND REGULATORY ALTERNATIVES SUMMARY TABLE

SUBCATEGORY	GROUPING	WASTE	ICWI or OSWI	FLOOR LEVEL OF CONTROL	ALTERNATIVES ABOVE FLOOR	POLLUTANTS TO BE REGULATED	COMMENTS
Whozit Industry	Small whozits (smaller than 5 ton/day)	Waste whozit trimings	ICWI	No control	1. Good operating practices 2. Cyclone 3. Venturi scrubber	Section 129 pollutants	Discussions with equipment vendors and manufacturers underway to investigate more cost-effective control options
”	Large whozits (greater than 5 ton/day)	Waste whozit trimings	ICWI	Good operating and mainten-ance practices	1. Cyclone 2. Venturi scrubber 3. Spray dryer	Section 129 pollutants	Conclusions regarding control options may be revised once emission test program is completed

Note: any pollution prevention control alternatives and environmental justice approaches would also be included in the table.

SUBCATEGORY INFORMATION SHEET FOR RAP APPENDIX

FORMAT: A separate sheet is to be prepared for each subcategory or subcategory grouping. The sheets are intended to closely follow the format already established for our subcategory definitions. However, additional information will need to be added to our existing format to address the requirements of the RAP, as noted below (new information is underlined.) The sheets will probably be about two pages in length and may include tables and/or figures. Database summary tables (summaries of inventory, emissions, and ICR/survey database information) incorporated with the current definitions should be retained and can be placed under the STATUS OF DATA COLLECTION AND ANALYSIS category. An advantage of retaining, but expanding, the current subcategory definition format is that portions of the expanded format could form the basis of the subcategory description sections to be incorporated into a background information document that will probably be needed to support the rulemaking.

SUBCATEGORY NAME:

ASSIGNED CAA SECTION (ICWI OR OSWI):

GROUPING WITHIN SUBCATEGORY:

POPULATION STATISTICS:

MATERIAL COMBUSTED:

COMBUSTION DEVICE:

BASIS FOR SUBCATEGORY BOUNDS:

POLLUTANTS CONSIDERED FOR REGULATION:

FLOOR LEVEL OF CONTROL:

REGULATORY ALTERNATIVES ABOVE FLOOR:

STATUS OF DATA COLLECTION AND ANALYSIS:

ISSUES AND NEEDS:

OTHER COMMENTS:

Subcategory definition sheet -- Example #1

SUBCATEGORY NAME: Chemical, Petroleum and Pharmaceutical Solid, Liquid and Sludge Incinerators

ASSIGNED CAA SECTION: 129 (ICWI)

DESCRIPTION OF TYPES OF MATERIALS COMBUSTED:

Includes industrial wastewater sludges, off-test and out-dated materials, and process discards. In some industries (e.g. pharmaceuticals) associated packaging materials are also combusted in the same incinerator.

GENERAL DESCRIPTION OF TYPICAL COMBUSTION DEVICES:

All types of incinerators are used, including single and multichamber, fluid bed, rotary kilns, multiple hearth and tray types.

BASIS FOR SUBCATEGORY BOUNDS:

OTHER COMMENTS:

May require subdividing once ICR data on wastes combusted is considered.

Subcategory definition sheet -- Example #2

SUBCATEGORY NAME: Wood Incinerators

ASSIGNED CAA SECTION: 129 (OSWI)

DESCRIPTION OF TYPES OF MATERIALS COMBUSTED:

Milled wood wastes and residues result from primary and secondary woodworking manufacturing activities. The moisture content is variable. The specific characteristics of these materials vary depending on the specie of wood. The composition is variable and contains no more than 5% by volume of contaminants such as sand, dirt, particle board, plywood, fiber board, cardboard, paper, glues, sealers, paints, and solvents.

Harvested wood waste and residues result from land clearing, silviculture, and forest management activities. The moisture content is variable. The specific characteristics of the materials vary depending on the specie of wood. The composition is variable and contains no more than 5% by volume of contaminants such as sand, dirt, orchard, nursery, and agricultural wastes.

GENERAL DESCRIPTION OF TYPICAL COMBUSTION DEVICES:

No harvested wood incinerators identified as yet. There may be a few milled wood incinerators, which are believed to be small, natural gas supplemented, forced air units.

BASIS FOR SUBCATEGORY BOUNDS:

OTHER COMMENTS:

Subcategory definition sheet -- Example #3

SUBCATEGORY NAME: Paper and Allied Product Manufacturing Waste and Residue Incinerators

ASSIGNED CAA SECTION: 129 (OSWI)

DESCRIPTION OF TYPES OF MATERIALS COMBUSTED:

Paper and allied product manufacturing wastes and residues result from the manufacture of paper, conversion of paper and paperboard, and the manufacture of paperboard boxes and containers. The moisture content is variable. The specific characteristics of these materials vary from mill to mill, but are predominantly comprised of cellulose from wood, they also may contain as much as 50% by weight of inorganic fillers and no more than 5% by volume of contaminants such as inks, glues, binders, pigments, and oils.

GENERAL DESCRIPTION OF TYPICAL COMBUSTION DEVICES:

No incinerators have been identified in this subcategory. This material is primarily (exclusively?) combusted in boilers.

BASIS FOR SUBCATEGORY BOUNDS:

OTHER COMMENTS:

Subcategory definition sheet -- Example #4

SUBCATEGORY NAME: Parts Reclaimers

ASSIGNED CAA SECTION: 129 (ICWI)

DESCRIPTION OF TYPES OF MATERIALS COMBUSTED:

This type of incinerator is used to reclaim metal parts for reuse in their current form. An organic coating (dried paint, varnish) or part (plastic, rubber) is burned off a wide variety of metal parts in these units. Metal parts fed to these primarily batch units include paint hooks/racks, electric motor armatures, transformer winding cores, and electroplating racks.

GENERAL DESCRIPTION OF TYPICAL COMBUSTION DEVICES:

Parts reclaimers are typically small, batch, fossil fuel-fired units. They are often called burnoff or bakeoff ovens. Operations consist of loading the cold burnoff oven with metal parts, igniting the afterburner, if present, and main burner (usually natural gas fired), and allowing the coating to pyrolyze into an ash-like material (often over a period of hours) which may be then mechanically removed or abrasive-blasted off the metal part. Because of the wide variety of parts recycled in these units, facility size varies widely, from small electric motor repair shops to large automotive assembly plants.

Number of Facilities in ICCRV2 database: 239
Number of Units in ICCRV2 database: 299
Employees per Facility: 1 - 7406 (avg. 675)
Fuel: natural gas (at least 78)
Heat Input: 0.2 MMBtu/hr - 3.7 MMBtu/hr

AIR POLLUTION CONTROL DEVICES from ICCRV2 database:

air pollution control device	number
not specified	168
direct flame afterburner	73
none	36
miscellaneous control devices	4
fabric filter - high temperature	3
catalytic afterburner - heat exchanger	3
direct flame afterburner - heat exchanger	3
wet scrubber - medium efficiency	2
gravity collector - low efficiency	2
wet scrubber - low efficiency	1
gravity collector - high efficiency	1
modified furnace/burner design	1

control of %O2 in combustion air	1
venturi scrubber	1

BASIS FOR SUBCATEGORY BOUNDS:

These units are subcategorized on the basis of similar purpose - recovering a metal part for reuse. This places them in section 129, rather than in section 112 with the scrap metal recovery units. They are kept separate from drum reclaimers, because they tend to be smaller and do not have the range of materials which can be present in drum residues.

OTHER COMMENTS:

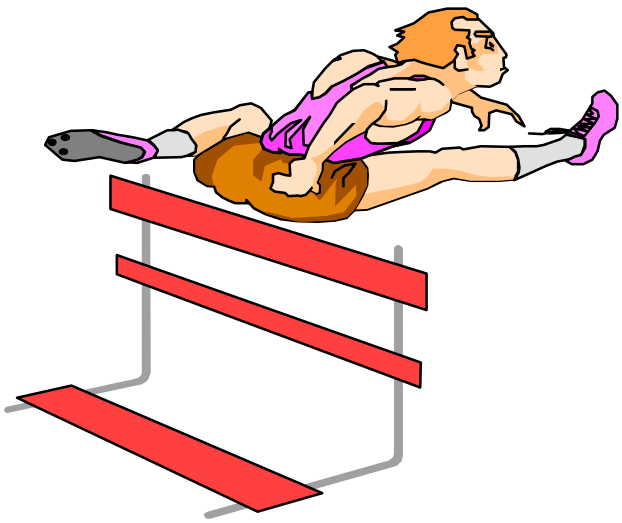
EMISSIONS DATA from ICCRV2 database:

pollutant, CAS	average emission rate, range	data points
PM	0.19 tons per year, 0.001 - 4.28	30
PM10	0.008 tons per year, 0.0008 - 0.034	22
CO	0.048 tons per year, 0.0051 - 0.335	26
VOC	0.26 tons per year, 0.001 - 4.275	45
SO2	0.006 tons per year, 0.00015 - 0.042	40
NOx	0.34 tons per year, 0.001 - 4.0	47
Acrolein, 107-02-8	2.7E-09 pounds per hour	1
Toluene, 108-88-3	1.4E-04 pounds per hour	4
, 115-07-1	1.9E-03 pounds per hour	2
Formaldehyde, 50-00-0	3.0E-03 pounds per hour	5
Benzene, 71-43-2	1.9E-04 pounds per hour	5
Acetaldehyde, 75-07-0	7.3E-09 pounds per hour	1
Naphthalene, 91-20-3	1.1E-04 pounds per hour	3
, 18540-29-9	4.1E-05 pounds per hour	2
, 193-39-5	9.2E-07 pounds per hour	2
, 205-99-2	4.9E-07 pounds per hour	2
, 207-08-9	5.5E-07 pounds per hour	2
Chrysene, 218-01-9	5.8E-07 pounds per hour	2
Benzo[a]pyrene, 50-32-8	7.0E-07 pounds per hour	2
, 53-70-3	1.0E-06 pounds per hour	2
1,2-Benzanthracene, 56-55-3	6.4E-07 pounds per hour	2
Lead, 7439-92-1	3.0E-04 pounds per hour	2
Nickel, 7440-02-0	8.7E-05 pounds per hour	2
Arsenic, 7440-38-2	5.0E-04 pounds per hour	2
Beryllium, 7440-41-7	4.2E-06 pounds per hour	2
Cadmium, 7440-43-9	1.4E-03 pounds per hour	2

Hydrogen chloride, 7647-01-0	0.044 pounds per hour	2

DISCUSSION

- RAP content, assignments, and schedule
- Other areas for coordination?
- Future BWG/IWG coordination team meetings and teleconferences ?



ATTACHMENT 8

Good Combustion Practices Guidance

GOOD COMBUSTION PRACTICES

This guidance is intended to be used by the source work groups in their evaluation of alternative concepts regarding good combustion practices. While operator training could also be considered a good combustion practice, it is covered by separate guidance.

Examples of practices listed are intended to indicate the range of existing practices which are dependent on the specific type of equipment utilized and the fuel/waste input to the combustion device. All examples of specific techniques are not considered applicable to all combustion sources. The source work groups should be requested to evaluate techniques, practices, and possible standard approaches appropriate for subcategories or other subsets of sources.

Periodic checks and adjustments of combustion equipment are intended to occur at intervals appropriate for the source, with key combustion checks timed no less frequent than to coincide with overhaul frequencies.

Good Combustion Technique	Examples of Practices	Applicable Source Types	Possible Standard
Operator practices	-Official documented operating procedures, updated as required for equipment or practice change -Procedures include startup, shutdown, malfunction -Operating logs/record keeping	All	-Maintain written site specific operating procedures in accordance with GCPs, including startup, shutdown, malfunction
Maintenance knowledge	-Training on applicable equipment & procedures	All	-Equipment maintained by personnel with training specific to equipment
Maintenance practices	-Official documented maintenance procedures, updated as required for equipment or practice change -Routinely scheduled evaluation, inspection, overhaul as appropriate for equipment involved -Maintenance logs/record keeping	All	-Maintain site specific procedures for best/optimum maintenance practices -Scheduled periodic evaluation, inspection, overhaul as appropriate

Good Combustion Technique	Examples of Practices	Applicable Source Types	Possible Standard
Stoichiometric (fuel/air) ratio	-Burner & control adjustment based on visual checks -Burner & control adjustment based on continuous or periodic monitoring (O2, CO, CO2) -Fuel/air metering, ratio control -Oxygen trim control -CO control -Safety interlocks	Open combustion	-SR limits appropriate for unit design & fuel -Routine & periodic adjustment -CO limit
Firebox (furnace) residence time, temperature, turbulence	-Supplemental stream injection into active flame zone -Residence time by design (incinerators) -Minimum combustion chamber temperature (incinerators)	-Open combustion with supplemental vent streams -Incinerators	
Proper liquid atomization	-Differential pressure between atomizing media & liquid -Flow ratio of atomizing media to liquid flow -Liquid temp or viscosity -Flame appearance -Atomizer condition -Atomizing media quality	Open combustion with liquid fuel/waste	-Routine & periodic adjustments & checks -Maintain procedures to ensure adequate atomization & mixing with combustion air
Fuel/waste quality (analysis); fuel/waste handling	-Monitor fuel/waste quality -Fuel quality certification from supplier if needed -Periodic fuel/waste sampling and analysis -Fuel/waste handling practices	All- where appropriate	-Fuel/waste analysis where composition could vary & of significance to HAP emissions (e.g., not pipeline natural gas) -Fuel/waste handling procedures applicable to the fuel/waste
Fuel/waste sizing	-Fuel/waste sizing specification & checks -Pulverized coal fineness checks	Solid fuel/waste firing	-Specification appropriate for fuel/waste fired -Periodic checks
Combustion air distribution	-Adjustment of air distribution system based on visual observations -Adjustment of air distribution based on continuous or periodic monitoring	Mainly stoker and solid fuel firing	-Routine & periodic adjustments & checks
Fuel/waste dispersion	-Adjustment based on visual observations	Solid fuel/waste firing	-Routine & periodic adjustments & checks

ATTACHMENT 9

Boiler Data Analysis

[Electronic copy in Adobe.PDF version only]

ATTACHMENT 10

Boiler Work Group Flash Minutes and Subgroup Minutes

BOILER WORK GROUP MEETING

FEBRUARY 26, 1998
WINSTON SALEM, NORTH CAROLINA

DISCUSSION & DECISIONS

- Ruth Mead updated the Work Group (WG) on the status of the inventory, survey, and emissions databases. The inventory database has been released and is on the Technology Transfer Network (TTN). A CD is available for purchase for $60. The survey and emissions databases will be posted to the TTN the first week of March.

- Jim Stumbar reviewed the discussions and directions from the Coordinating Committee meetings. Mr. Stumbar stated that the Boiler WG will make a presentation to the Coordinating Committee in April on hazardous air pollutants (HAP's) of interest and pollutants for testing.

- Wendell Brough and Andy Bodnarik presented the plan for completing work on the HAP's of interest list. They will work to finalize the list prior to the March meeting.

- The WG concurred to create a task group that would identify the preliminary list of pollutants to be tested and develop a preliminary testing program. The task group will try to develop products for the April Coordinating Committee meeting. The testing task group will work on the draft test program concurrently with work done by the HAP's of interest task group, but will incorporate the results of the HAP's of interest task group in their plan. The members of the task group are: Mike Hewett, Gordon Gaetke, Gunseli Shareef, Roy Wood, Alex Johnson, Bill Freemen, Andy Counts, and Steve Phelps.

- Tom McGrath of the Testing and Monitoring Protocols WG made a presentation on procedures to follow and information needed to develop a testing program.

- Mike Soots presented test information on wood fired boilers in the industry he represents. Mr. Soots agreed to provide copies of the test reports to EPA.

- Rick Crume from the Incinerator WG made a presentation on work the Incinerator WG was doing to meet statutory and legal deadlines. Mr. Crume discussed how sources in the Boiler WG may fit into analyses and documentation the Incinerator WG was conducting. Members of the Boiler WG agreed that it was a good idea to use fact sheets developed by the Incinerator WG as templates.

- The members of the WG agreed that reports from the WG to the Coordinating Committee should generally have names of individuals. If it is clear to the WG

that other parties (e.g., State or Environmental Caucus) have officially taken a position on an issue, then the party could also be listed. The members of the boiler WG agreed to be sensitive to this concern on a case-by-case basis.

- Paul Tucker updated the WG on the status of the economics task group. A summary of the status will be forwarded to the Economics WG.

- Good combustion practices were discussed. Next steps for the subgroups will be to review how good combustion practices can be incorporated in their industries.

- An update was provided on the status of recent pollution prevention meetings. Additional pollution prevention meetings are planned to discuss operator training, and input and output based practices. Representatives of the pollution prevention subgroup requested members of the Boiler WG to provide comments on how input and output based practices can be incorporated.

- Jim Eddinger of EPA presented the re-analysis of the control levels for boilers using the survey and inventory databases, a summary of the number of boilers that could be associated with previously developed model plants, and a summary of test information in the emissions database and potentially available from the survey responses. Members of the WG had many questions and comments. Members agreed to provide specific comments to EPA on the analysis by March 11.

ACTION ITEMS

- An alert will be sent to members indicating the number of boilers in the latest version of the inventory database. The alert will also indicate the number of fossil fuel, wood, and non-fossil boilers.

- Wendell Brough and Andy Bodnarik will work to finalize the HAP's of interest list prior to the March meeting.

- WG Members agreed to provide specific comments to EPA on the revised level of control, model plant, and test information analysis by March 11.

NEXT MEETING

- The next meeting will be March 24 and 25 in Washington D.C. On March 25th, the meeting will end at 3 pm.

- Future meetings planned are April 30 in Fort Collins, Colorado, June 10 and 11 in Boston, July 30 in California, and September 24 in RTP, NC.

- The testing task group scheduled a teleconference for Thursday, March 5.

- EPA will schedule future meetings for the economics task group and control technologies task group.

FOSSIL FUEL SUBGROUP MEETING
(February 26, 1998)

ATTENDEES

Wendell Brough
- Mark Bryson
  - Stanley Carter
  - John deRuyter

Gerald Doddington
- Bill Freeman
  - Alex Johnson
  - Miriam Lev-On

Ruth Mead
- Christy Presson
- Gunseli Shareef
- Roy Wood

DISCUSSIONS AND DECISIONS

- Gunseli Shareef, Wendell Brough, Mark Bryson and Alex Johnson will remain active with the HAPs of Interest ad-hoc group. This group expects to have recommendations for the fossil fuel subgroup to review by the March WG meeting.

- There was some discussion about the applicability of some of the available test data for fossil fuel boilers. Alex Johnson suggested that the subgroup confirm that test data from the utility HAP study is applicable to ICCR sources.

- Miriam Lev-On said that the WSPA API data contains test information on 17 boilers firing gas, light oil or crude/residual oil. If ERG/EPA does not have these electronically, she said they would provide this.

- The subgroup nominated members to participate in the testing program ad-hoc group. Bill Freeman of API and Roy Wood, with Kodak, will be members of the ad-hoc group. Alex Johnson and Gunseli Shareef agreed to provide additional support when they were able.

- John deRuyter reviewed the work he had done with ranking controls in the inventory database according to HAP control efficiencies. He had only worked with the gas-fired units in the inventory. He ranked the controls according to no effect, insignificant effect and good combustion practice techniques. He indicated that the MACT floor for gas-fired units looked like it would be no control with good combustion practices as an alternative.

- Alex Johnson pointed out that the group must be careful when ranking controls because some NOx controls have a possible correlation with an increase in HAPs.

- There was also some discussion about the MACT floor and MACT being a numerical limit as opposed to just good combustion practices or a particular add-on control. Ruth Mead pointed out the EPA generally prefers not just an add-on control but a numerical limit so that facilities can use innovative technology to meet the limit.

- John deRuyter and Stanley Carter will do further review of the control devices for each fossil fuel subcategory. This analysis will be done on version 3.0 of the Inventory database. John deRuyter also requested that EPA provide lists of unique controls along with the number of sources using each control. John deRuyter will communicate further with Jim Eddinger on the format needed to do this analysis.

- The subgroup decided to review GRI reports to determine if there are any natural breakpoints by size that could also be incorporated into the control device analysis and model plants. John deRuyter will discuss this further with Jim Eddinger and ERG to determine what sizes, if any, should be broken down.

- Alex Johnson suggested looking at manufacturer's data for units less than 10MMBtu/hr to determine if there is anything unique about the boilers in this size range so that a rationale could be provided for any size cuts chosen.

- The subgroup briefly discussed pollution prevention and what has come out of the pollution prevention subgroup. John deRuyter stated if operator training became part of the process, he would like to see it in the form of state agencies approving facility-developed programs. Alex Johnson said the pollution prevention subgroup was still looking at areas such as energy efficiency, steam management, incentive-type programs and fuel substitution.

ACTION ITEMS

- Wendell Brough will review Andy Bodnarik's changes to the HAP's of interest with Gunseli Shareef, Frank Ferraro, Mark Bryson and Alex Johnson. When this group has refined the list, the group will review this list with Tom McGrath of the Testing and Monitoring Protocols WG to determine if there are cost reasons for HAPs to be added or deleted from the list. This list will then be handed over to the new testing program ad-hoc group.

- John deRuyter requested a new list of unique control devices for each fossil fuel boiler subcategory based on Version 3.0 of the inventory database so that he and Stanley Carter can begin to rank these for HAP removal efficiency. He requested that the information contain the number of sources with each control device and

possibly some size breakdowns. He will discuss the format further with Jim Eddinger and ERG.

- Alex Johnson requested that the next version of the control level summary include not just the percentage of units that have baghouses, ESPs, etc., but also include the total number of sources that have each of these general control devices.

- The subgroup requested that EPA redo the preliminary MACT analysis on the new version of the emissions database.

- The HAPs of interest subgroup will have recommendations for the fossil fuel subgroup to review at the March WG meeting.

NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

NON-FOSSIL FUEL SUBGROUP MEETING
(February 26, 1998)

ATTENDEES

Roy Oommen
Todd Barker
Mike Blumenthal
Andrew Bodnarik
David Cooper
Gordon Gaetke
Michael Hewett
Coleman Kavanaugh

David Marrack
Jeffrey Roop
Jim Stumbar
Prakasam Tata

Paul Tucker

DISCUSSIONS AND DECISIONS

- Members discussed the testing task group and who should be on it. The subgroup nominated Gordon Gaetke and Mike Hewett to be on the task group. The members also requested that EPA take a strong lead role in the task group.

- Members agreed that the subcategories developed at the previous meeting were too specific. Jeffrey Roop volunteered to work with EPA in revising the subcategories for the next meeting.

- Members noted that a HAP's of interest list has not been developed for the non-fossil non-wood fuels. Catherine Beahm volunteered to develop draft lists (for 112 and 129 sources) for the March meeting based on previous work done by Jim Stumbar, lists in the Act, and pollutants being regulated in other standards, such as the boiler and industrial furnaces standard.

ACTION ITEMS

- Catherine Beahm will draft a preliminary HAP's of interest list for non-fossil fuels prior to the March meeting.

- Jeffrey Roop and EPA will develop revised subcategories for non-fossil boilers for the March meeting.

NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

WOOD SUBGROUP MEETING
(February 26, 1998)

ATTENDEES

Delbert Cline
Jim Eddinger
Frank Ferraro
Chad Leatherwood

Bob Palzer
John Pinkerton
Mike Soots
Stephen Smith
Vladimir Zaytsef

DISCUSSION AND DECISIONS

- Members of the wood subgroup decided to divide wood-fired boilers into subcategories based on fuel type and the regulation that would affect each source. These categories are as follows:

  Section 112 boilers: dry wood products
  timber products

  Section 129 boilers:dry wood products
  timber products

  treated wood products

- Within these 5 subcategories, the members of the group decided to conduct an analysis that will evaluate boiler population, air pollution control device use, and size distribution. This analysis will use the ICCR survey database and will evaluate these parameters for boilers firing: (1) greater than 90 percent of the listed wood products, and (2) boilers firing greater than 50 percent of the listed wood products.

- Members of the subgroup decided to change the boiler description of all the model plant boilers to stokers instead of the specific description of spreader-stokers. This decision was made so that other types of stoker boilers would be included in the model boiler analysis.

- The subgroup nominated Andy Counts and Steve Phelps to the testing task group. Bob Palzer noted that he would like to be allowed to participate with the testing task group when he has availability but he does not have the time to be a full member.

- Vladimir Zaytsef volunteered to become a member of the Add-on Control Device Subgroup.

ACTION ITEMS

- EPA will re-evaluate control levels and number of boilers associated with model plants based on suggested changes made by the subgroup.

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NEXT MEETING

- The next subgroup meeting will be on March 24 and 25 in Washington D.C., in conjunction with the Boiler WG meeting.

ATTACHMENT

Full Work Group Attendance List

Todd Barker	Catherine Beahm
Michael Blumenthal	Andrew Bodnarik
Wendell Brough	Mark Bryson
Stanley Carter	Delbert Cline
David Cooper	Rick Crume
Kim Davis	John deRuyter
Jon Devine	Gerald Doddington
Jim Eddinger	Frank Ferraro
Bill Freeman	Gordon Gaetke
Michael Hewett	Brian Holmes
Alex Johnson	Coleman Kavanaugh
Miriam Lev-On	Chad Leatherwood
David Marrack	Tom McGrath
Ruth Mead	Roy Oommen
Bob Palzer	John Pinkerton
Fred Porter	Christy Presson
Jeffrey Roop	Gunseli Shareef
Stephen Smith	Mike Soots
James Stumbar	Prakasam Tata
Paul Tucker	Roy Wood
Vladimir Zaytseff	